

Conversions	
Imperial to Metric or Metric to Imperial	Imperial to Metric or Metric to Imperial
1 fluid ounce \approx 28.413 mL	1 inch \approx 2.54 cm
1 pint \approx 0.568 L	1 foot \approx 30.48 cm
1 quart \approx 1.1365 L	1 foot \approx 0.3048 m
1 gallon \approx 3.785 L	1 mile \approx 1.609 km

1. Unit Conversions (Round to nearest whole number)

- a) A race is 2 miles. Convert to km.
- b) Burj Dubai is the world's tallest building at 2,684 ft. Convert to m.
- c) Standard paper is 8x11 inches. What are the dimensions in cm?

Convert each volume

- d) A drink is 2.5 quarts. Find the volume in L.
- e) A supersoaker carries 3 gallons of water. What is the volume in mL?
- f) How many pints is 2.4 L of paint?

Same System Conversions

- g) How many inches are there in 2 miles?
- h) A 1 gallon tank contains how many fluid ounces?
- i) A person loses 2.45 L of water after exercising. How many mL is that?

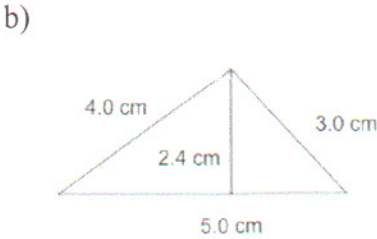
2. Perimeter and Area of 2D Figures and Composite Figures

Find the perimeter and area of each figure. Include *formulas* and *show your work*. Units! (*Round to the nearest tenth*)



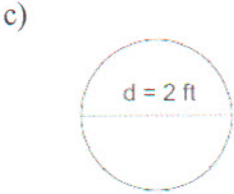
Perimeter

Area



Perimeter

Area

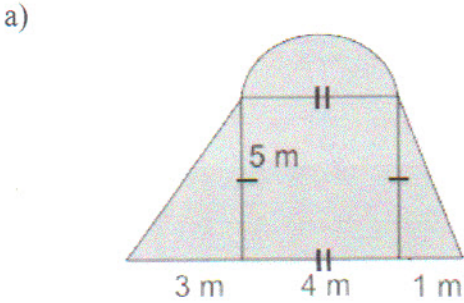


Perimeter

Area

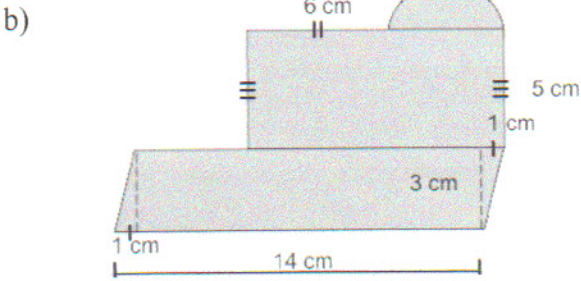
5. Composite Figures (Round to the nearest hundredths)

Find the *perimeter* around the shaded figure and the total shaded *area*. Remember Pythagoras's theorem. Include *formulas* and *show your work*. Units!



Area:

Perimeter:



Area:

Perimeter:

6. Volume and Surface Area of 3D Objects (Round to two decimal places) Include *formulas* and *show your work*. Units!

- a) Determine the *surface area* of a cube of length 6 cm.
- b) Determine the *surface area* of a cylindrical can of height 5 inches and radius 2 inches.
- c) Determine the *volume* of iron required for a spherical ball composed of an empty interior with radius 10 cm and an iron exterior with a total radius of 15 cm. (Hint: Composite figure).
- d) A cylinder has 540 cm^2 surface area and height 50 cm. Determine its *radius* and *volume*.
- e) A hollow log is 10 m long. The radial distance from the center of the log until it meets wood is 10 cm. The wood is then 2 cm thick. What total volume of the wooded area? (again, composite figure).

7. Maximum and Minimum Problems (Round to 1 decimal place)

Include *formulas* and *show your work*. Units!

- a) A farmer wants to maximize the area of her lot, to save on the cost of wood. She purchased 50 m of wood. What is the maximum area of 4 sided lot she can produce?
- b) A circus has to travel light to save on gas. The big top tent is a circle with a total perimeter of 100 ft. Given this, what is the total area of the circular tent.
- c) To minimize heat loss from a rectangular prism (1728 cm^3) it has been given the least surface area possible. What are the dimensions of the prism? What is the surface area?
- d) A shipping company wants to maximize the volume of their cereal boxes while using only 1014 cm^2 of material. What is the maximum volume of this cereal box in cm^3 ?
- e) (Expert Question) A pig pen has 3 fenced sides since because it is against the barn. The total area of the pen is 40 m^2 . Determine the minimum perimeter and the dimensions of the fenced area if the dimensions are whole numbers.